

WEATHER IN THE UNITED STATES

[The Climatological Division, OLIVER L. FASSIG, in Charge]

THE WEATHER ELEMENTS

By M. C. BENNETT

The month of October, as a whole, was warmer than normal in all sections of the country except a small area along the Pacific coast. The warmest weather occurred between the Appalachian and Rocky Mountains where the average for the month was generally from 4° to 7° above the normal. In large portions of the country where killing frost or freezing temperature almost invariably occurs before the end of October, this month ended without such occurrence, and the same was true of snowfall.

The precipitation during the month was scanty in most sections. A rather large area extending from the central portion of Indiana, Illinois, and Missouri northward received more than normal, some stations reporting one and one-half times the usual amount for October. The north Pacific and central Rocky Mountain areas also received rather generous falls, while in much of the east and south, except locally, the month was dry, many stations receiving less than 25 per cent of the normal. The far Southwest from New Mexico to the Pacific likewise received only about 25 per cent of the monthly average.

TEMPERATURE

October temperatures were decidedly like those of the September which had just preceded. Again only portions of the Pacific States averaged cooler than normal, and those portions but slightly. Most of the country, especially between the Rocky Mountains and the upper Lakes and lower Mississippi River, was decidedly warmer than normal. Warm weather prevailed nearly everywhere during most of the opening decade, notably from the middle and northern Plains to the upper Lakes. About the close of this decade cooler weather reached the far Northwest and the first part of the second decade was colder than normal in most northern and far-Western districts. The latter part of the second decade was featured by several comparatively cool days from the upper Mississippi Valley eastward and southeastward. Meantime warmth had prevailed in the greater part of the country, especially the Southwest.

The final decade was remarkable for high temperatures practically everywhere east of the Rocky Mountains until about the 28th, when cold weather reached the northern portions of the Plains and Rocky Mountain regions, whence it advanced southeastward so that the month closed with comparatively low temperatures prevailing in the central valleys and the Gulf States.

As a whole the month averaged slightly colder than normal in parts of the Pacific States, but elsewhere warmer. In much of Texas and the southern Plains it was the warmest October of record, and usually between the Rocky and Appalachian ranges the average excess was 4° to 7°. In the North Atlantic States the excess was but about 3° and near the south Atlantic coast less than 2°.

A temperature of 105° was noted in western Texas on the 6th. In most States the highest readings reported were between 90° and 100°, but in a few States, chiefly along the northern boundary, they were from 90° to 85°

or slightly less. In nearly all States the highest readings occurred during the first decade.

The lowest reading reported was 7° below zero at a high station in Colorado on the 30th. Most States of the western half noted readings lower than 20°, also most northern border States to eastward, and some points in the middle and southern Appalachians. In nearly all States of the Ohio and Mississippi Valleys and in parts of the Southeast there were no readings lower than 25°. From the upper Mississippi Valley eastward and south-eastward the lowest marks occurred chiefly during the middle decade, particularly about the 19th, but from the Plateau to the Plains and in the lower Mississippi Valley they usually occurred just before the month ended.

PRECIPITATION

As in September, the rainfall of October, 1931, was plentiful in much of the north-central portion and usually in the middle Rocky Mountain area, while it was very scanty in the Southeast and generally somewhat less than normal in the North and Middle Atlantic States, the Plains region, and the middle and northwestern Plateau area.

The first three weeks were decidedly dry in the Southeast, save southern Florida and a few other limited areas. Some portions of the Plains and most of the middle and upper Mississippi Valley and the western part of the Lake region had important rainfall during the second week of the month.

The final decade brought the most important rainfall of the month. There was much rain in the far Northwest, and in Wyoming and adjacent areas; likewise most districts from the Dakotas eastward to the north Atlantic coast and considerable parts of the Ohio and lower Mississippi Valleys and the near Southwest had moderate to liberal rainfall.

Only about one-third of the States had rainfall greater than normal for October, and in these the amounts were only moderately large. Much of the north-central portion of the country received somewhat more than normal, Illinois and Indiana averaging almost 4 inches, or an excess of over one-third the normal amounts. Smaller departures above normal were noted in the Pacific Northwest and a few other areas. The eastern and central portions of Oklahoma, with much of northern Texas and western Arkansas, received a considerable excess, as did some parts of Florida and southeastern Louisiana.

In the entire country the greatest amount for the month so far reported was 15.27 inches, at a station in western Washington. East of the Pacific States the greatest amount was 13.44 inches, at Burrwood, La.

From Pennsylvania southward there was a notable shortage in the Atlantic States, South Carolina receiving but four-fifths of an inch, on the average, or but about one-quarter of normal. At Charleston this was the sixteenth consecutive month to bring less than normal rainfall. Most of the East Gulf States, the lower Mississippi and upper Ohio Valleys, and southeastern and central Texas measured far less rain than normal; and there was a decided shortage in the greater part of the Rio Grande Valley, the western Plains, Montana, and the northern and western Plateau area.

SNOWFALL

The snowfall was decidedly light compared with the average amounts for October. Particularly from the central part of the Lake region westward over northern districts almost to the Rocky Mountains there was either no snow or merely negligible amounts, the greater part of the Missouri Valley reporting a few flurries during the final week. From northern New York southwestward to the central Appalachians there was a little snow just after the middle of the month.

From the Rocky Mountain States westward to beyond the Cascade-Sierra crest there was snowfall over considerable areas, though usually only at the higher elevations. This occurred almost wholly during the last fortnight of the month, and was generally of small amount, though there was a monthly fall of 52 inches at Mount Baker Lodge, in Washington.

SUNSHINE AND RELATIVE HUMIDITY

More than the usual amount of sunshine was received over much of the Atlantic Coast States, the upper Mississippi and upper Missouri Valleys and portions of Oklahoma, northern Texas, and southern New Mexico. Less than the normal amount was received in the upper Ohio, central Mississippi, and lower Missouri Valleys. Elsewhere it was generally near the average.

The relative humidity was above the normal in much of the Ohio, the central and upper Mississippi, and lower Missouri Valleys, in portions of the central Rocky Mountains and southern Plateau regions and locally in central Texas and on the Gulf coast. Elsewhere it was generally below the average, but in most sections the departures therefrom were small.

SEVERE LOCAL STORMS, OCTOBER, 1931

The table herewith contains such data as have been received concerning severe local storms that occurred during the month. A revised list of tornadoes will appear in the Annual Report of the Chief of Bureau]

Place	Date	Time	Width of path (yards) ¹	Loss of life	Value of property destroyed	Character of storm	Remarks	Authority
Crawford, Fremont, and Madison Counties, Iowa.	6					Rain and flood	Lowlands inundated; considerable damage to crops, dirt roads, and sewers.	Official U. S. Weather Bureau.
Seneca and Crawford Counties, Ohio.	6					Floods	Crops, roads, and bridges damaged.	Do.
Marshall County, Iowa.	7	12:15 a. m.			\$2,300	Wind	Crops, windmills, and garages damaged.	Do.
Rotan (near), Tex.	7	4 p. m.	1,760		500	Tornado	50 bales of cotton destroyed; 2 persons injured.	Do.
Terre Haute (near), Ind.	7	5:53 p. m.			16,000	Electrical	Dwelling burned and paper mill damaged by lightning.	Do.
Ames, Iowa.	7	P. m.			52,505	do.	Cattle barn at Iowa State College destroyed.	Do.
Fort Mills, S. C.	9	6 p. m.	1,300		4,000	Small tornado	Crops and farm buildings damaged; path 1 mile long.	Do.
Honea Path (near) to Due West (near), S. C.	9	9 p. m.	1,320		6,000	Hail	Much cottonseed destroyed; 150 bales of cotton damaged; path 12 miles long.	Do.
Gramling, S. C.	9	P. m.			2,000	Thunderstorm	Schoolhouse damaged by lightning.	Do.
Shelby County, Iowa.	10	4:30-5 p. m.			25,000	Rain, hail, and wind.	Glass in buildings and greenhouses broken; poultry killed; trees damaged; path 10 miles long.	Do.
Norton, Phillips, and Sheridan Counties, Kans.	10	5:30-7 p. m.	20 mi.			Hail and wind	Corn damaged 90 per cent in places; small farm buildings, implements, and windmills damaged; 2 persons injured; path, 65 miles long.	Do.
Marshall County, Iowa.	10	7-8 p. m.				Rain, hail, wind, and electrical.	Considerable damage to roofs, farm buildings, and trees; poultry killed; electric, power, and telephone services crippled.	Do.
Cloud, Jewell, Republic, and Washington Counties, Kans.	10	8 p. m.	10 mi.		15,000	Violent wind	Damage chiefly to farm buildings, livestock, and telephone lines; path, 40 miles long.	Do.
Bureau, Carroll, and La Salle Counties, Ill.	10	P. m.				Rain and flood	Pavements damaged; railroad beds washed out; basements flooded; crops hurt; some loss of livestock.	Do.
Cass and Pottawatomie Counties, Iowa.	10	do.				Wind and rain	Farm buildings, windmills, and trees damaged; several buildings moved on foundations; 1 person injured.	Do.
Clinton and Jackson Counties, Iowa.	10	do.				Rain and flood	Lowlands inundated; minor railroad washouts; 10 small bridges wrecked; basements flooded.	Do.
Freemont County, Iowa.	11	5:50-10:30 p. m.				Wind	Trees, roofs, and outbuildings damaged.	Do.
Colby (near), Kans.	11	7 p. m.				Hail	Chief damage to corn and other feed crops.	Do.
Shreveport, La. (7 miles southeast).	15	1:50 p. m.			\$500	Tornado	Character of damage not reported; path 3 miles long.	Do.
Gouverneur (near), N. Y.	25				3,000	Thunderstorm	Farmhouse struck by lightning and burned.	Do.
Quincy, Ill.	25	A. m.			1,500	Rain and flood	Basements flooded; sewers and sidewalks damaged; traffic delayed.	Do.
Wyoming (eastern half)	26-29					Wind	Poles blown down; many miles of fences damaged or destroyed; store windows broken in Cheyenne.	Do.
Somerset (near), Tex.	29	4:30 p. m.	1,760		75,000	Tornado	75 oil derricks damaged; minor damage to other property.	Do.

¹ "Mi." signifies miles instead of yards.

RIVERS AND FLOODS

By RICHMOND T. ZOCH

[River and Flood Division, Montrose W. Hayes in charge]

Heavy local rains in Crawford County, Ohio, on the 6th, caused creeks to overflow, doing damage estimated at \$1,200.

The only river flood was in the Grand, in northcentral Missouri. It was of very minor importance and the attendant damage was estimated at only \$100.

Table of flood stages in October, 1931

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
MISSISSIPPI SYSTEM					
Missouri Basin					
Grand:	Feet			Feet	
Gallatin, Mo.-----	20	12	13	24.1	12
Chillicothe, Mo.-----	18	12	14	21.2	13